Determining Factors Affecting the Adoption of Fodder Crops by Farmers in Ethiopia and Kenya

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I. Introduction

- Fodder crop production enables farmers to improve their livestock production.
- Although the livestock population is high in Ethiopia and Kenya, its economic contribution is below potential due to many reasons, including inadequate feed quality and quantity.
- Therefore, it is critical to determine the factors affecting fodder crop adoption by farmers in these countries

II. Objectives

- Determine the level of adoption of fodder cultivation in selected regions of Ethiopia and Kenya.
- Determine the factors affecting fodder crop adoption by farmers in selected regions of Ethiopia and Kenya.

III. Materials & Methods

- Data collected from 180 villages per country selected from regions with dairy production.
- Group interviews conducted using structured questionnaire.
- Data analysis with R: descriptive statistics and Tobit model.

IV. Results

- Fodder adoption intensity, that is share of farm area per household allocated to fodder crop production, was 2% in Ethiopia and 11% in Kenya.
- Most frequently cultivated were Napier grass, *Sesbania sesban* and Rhodes grass in Ethiopia; Napier grass, *Calliandra callothyrsus* and Rhodes grass in Kenya.

Ethiopia

- Tobit analysis revealed that number of fodder projects had a positive influence on adoption intensity of fodder.
- Total area of arable land per farm household had a negative effect ($p<0.05$) on adoption (Tab.1).

Tab. 1. *Tobit regression results of fodder adoption intensity, Ethiopia*

Coefficients	Estimate	S.E.	z value	Pr(>|z|)
(Intercept)	1.03e-03	1.34e-02	-0.076	0.940
Wage Level (ETB/male/day)	1.33e-04	1.15e-04	1.153	0.249
Arable Land per Farm (ha)	-3.31e-03	1.56e-03	-2.124	0.034 *
Altitude (m a.s.l.)	8.53e-07	5.15e-06	0.166	0.868
Share of Marketed Milk (%)	1.17e-04	6.54e-05	1.792	0.073 •
Fodder Projects (n)	2.90e-03	1.28e-03	2.267	0.023 *
Distance Nearest Town (km)	1.59e-04	1.61e-04	0.982	0.326
Dairy Cow per Farm (n)	7.04e-03	4.08e-03	1.725	0.085 •
Log (scale)	-3.66e+00	5.42e-02	-67.443	<2e-16 ***

Significance levels: • p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Kenya

- Effect of total land area per farm was negative and significant ($p<0.05$), suggesting that larger farms were less likely to produce fodder crops than smaller farms.
- Other variables with a significant negative effect on fodder adoption were distance to nearest town centre ($p<0.05$) and share of tractor tillage use ($p<0.01$).

Kenya

Altitude, milk marketing rate, number of dairy cows per farm, and the price of Napier grass (Tab. 2) had a significant and positive impact on proportion of land allocated to fodder crops.

Tab. 2. *Tobit regression results on fodder adoption intensity, Kenya*

Coefficients	Estimate	S.E.	z value	Pr(>|z|)
(Intercept)	5.26e-02	8.77e-02	0.599	0.549
Arable Land per Farm (ac)	-1.17e-02	4.54e-03	-2.565	0.010 *
Dairy Cow (Crossbred) per Farm	1.09e-02	4.14-03	2.624	0.009 **
Distance Nearest Town (km)	-1.41e-03	5.971e-04	-2.357	0.018 *
Milk Price (KES)	-5.68e-04	5.86e-04	-0.970	0.332
Milk Collection Centre Availability	1.85e-02	2.16e-02	0.858	0.391
Share of Marketed Milk (%)	9.52e-04	3.88e-04	2.452	0.014 *
Napier Price (KES)	1.12e-02	3.63e-03	3.076	0.002 **
Altitude (m a.s.l.)	3.63e-05	1.77e-05	2.053	0.040 *
Wage Level (KES/male/day)	8.28e-05	1.10e-04	0.751	0.453
Share of Tractor Tillage (%)	-7.20e-04	2.70e-04	-2.670	0.008 **
Extension Visit (Fodder) Availability	2.82e-02	1.96e-02	1.440	0.150
Awareness Level of Participants	6.84e-04	3.66e-04	1.868	0.062 •
Log (scale)	-2.36	0.055	-42.84	<2e-16 ***

Significance levels: • p<0.1, * p<0.05, ** p<0.01, *** p<0.001

V. Conclusions

- Fodder adoption projects and market-related variables are key drivers that increase intensity of fodder adoption in Ethiopia and Kenya, respectively.
- Some regional variables such as altitude and distance to nearest town also affect fodder adoption intensity.
- With respect to fodder-related projects, our findings can guide government's and stakeholders' focus on regions with high adoption potential.
- Especially in regions where dairy cattle keeping predominates, adoption of improved fodder crops should be fostered by raising awareness among farmers and facilitating commercialization of dairy products.

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